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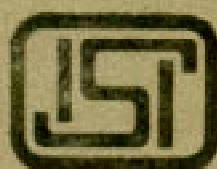
*Indian Standard*

SYMBOLS AND ABBREVIATIONS FOR  
USE IN GEOLOGICAL MAPS, SECTIONS AND  
SUBSURFACE EXPLORATORY LOGS

**PART I ABBREVIATIONS**

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# Indian Standard

## SYMBOLS AND ABBREVIATIONS FOR USE IN GEOLOGICAL MAPS, SECTIONS AND SUBSURFACE EXPLORATORY LOGS

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# *Indian Standard*

## SYMBOLS AND ABBREVIATIONS FOR USE IN GEOLOGICAL MAPS, SECTIONS AND SUBSURFACE EXPLORATORY LOGS

### PART I ABBREVIATIONS

#### 0. FOREWORD

**0.1** This Indian Standard ( Part I ) was adopted by the Indian Standards Institution on 2 April 1974, after the draft finalized by the Subsurface Exploration Sectional Committee had been approved by the Civil Engineering Division Council.

**0.2** In all spheres of engineering construction, data on the nature of the geological formations constituting the foundations are indispensable. Often, these data are given on maps or in geological sections using symbols and abbreviations. Geological maps and sections are also required for other activities, such as mining and mineral prospecting. Such maps and sections are, therefore, being prepared by various agencies in the country. In the absence of any standard for the guidance of the engineering geologist or engineer, different symbols and abbreviations are being used for different agencies, the result being entirely different representations of the same geological data. The data collected and presented by one agency for a particular purpose are often useful to other agencies investigating for a different job. It, therefore, becomes essential for all agencies to follow the same practice. This standard fulfils this need.

**0.2.1** This standard ( Part I ) deals with abbreviations while other parts are as follows:

Part II Igneous rocks

Part III Sedimentary rocks

Part IV Metamorphic rocks

Part V Line symbols for formation contacts and structural features

**0.3** In the formulation of this standard due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating it to the practices in the field in this country. The abbreviations are based on the principles laid down by the International Organization for Standardization.

**1. SCOPE**

**1.1** This standard ( Part I ) gives abbreviations to be used for describing stratigraphic divisions, geological features and minerals for use in geological maps, sections and logs of bore holes, test pits, exploratory drifts and shafts for river valley projects.

**2. ABBREVIATIONS**

**2.1** Abbreviations to be used for describing stratigraphic divisions on geological maps and sections are given in Table 1.

**TABLE 1 ABBREVIATIONS FOR DESCRIBING STRATIGRAPHIC DIVISIONS**

AGE	ABBREVIATION
Quaternary	Q
Tertiary	TT
Neogene	N
Palaeogene	Pze
Mesozoic undifferentiated	MZ
Cretaceous	K
Jurassic	J
Triassic	T
Palaeozoic undifferentiated	PZ
Permian carboniferous	PC
Devonian	D
Silurian	S
Ordovician	O
Cambrian	G
Pre-Cambrian	A

**2.2** Where necessary, the abbreviations given in Table 2 should be used for describing geological features in drill hole logs and geological sections.

**2.3 Abbreviations for Minerals** — Abbreviations for minerals given in Table 3 may be used for better characterization of rocks on geological maps and logs.

**2.3.1** The mineral abbreviations should be in small letters, with the exception of chemical elements of which the first letter is a capital. In those cases where letters are also used for designation of other rock characteristics, the abbreviations for minerals should be marked in a special way ( for example, by choosing a different type of writing or by framing the abbreviations ). The marking should be precised in a key. If the occurrence



of several minerals in the same rock is to be indicated by letters, the abbreviations should be listed in the range of importance of the minerals. The most frequent mineral should be placed on top.

### 2.3.2 Graphic Symbols for Important Minerals

**2.3.2.1** The representation of minerals may be necessary for better characterization of certain rocks. In principle there are two possibilities to represent these minerals in the symbols for rocks as given below:

- a) By adding an additional symbol characterizing the mineral to the elementary symbol of the rock in question ( given in Table 4 ).
- b) By inscription of letters in the symbol of the rock ( given in Table 3 ).

**2.3.2.2** It is impossible to fix symbols for all existent minerals because of their great number. Symbols for some of the common rock-forming minerals are given in Table 4.

**TABLE 2 ABBREVIATIONS FOR DESCRIBING GEOLOGICAL FEATURE IN LOGS AND SECTIONS**

( Clause 2.2 )

SL No.	FEATURE	ABBREVIATION	SL No.	FEATURE	ABBREVIATION
1)	altered	altd	19)	clay-filled	cl.fd
2)	alternating	alt	20)	coarse	c
3)	angular	ang	21)	coarse-grained	c.gr
4)	auger hole	AH	22)	compact	compt
5)	bedded	bdd	23)	conglomerate	cgl
6)	bedding plane	bdg. pl	24)	consolidated	consol
7)	bedrock	BR	25)	contact	cont
8)	bore hole	BH	26)	core hole	CH
9)	bottom	bot	27)	cross bedding	c.bdg
10)	boulders	bldrs	28)	crystalline	x-lline
11)	brecciated	brec	29)	dark	dk
12)	calcareous ( limey )	calc	30)	drill hole	DH
13)	calyx hole	CXH	31)	drive sample hole	DSH
14)	carbonaceous	carb	32)	fine	f
15)	cavity	cav	33)	fine grained	f.gr
16)	chert	ch	34)	fishtailed hole	FH
17)	churn drill hole	CDH	35)	fissile	fis
18)	clay	cl	36)	formation	fm

( Continued )

**TABLE 2 ABBREVIATIONS FOR DESCRIBING GEOLOGICAL  
FEATURE IN LOGS AND SECTIONS — *Contd***

Sl No.	FEATURE	ABBREVIATION	Sl No.	FEATURE	ABBREVIATION
37)	fracture	frac	72)	quartzite	qzt
38)	fragment	frag	73)	reddish	red
39)	friable	fri	74)	rounded	rdd
40)	granular	gran	75)	sand	sd
41)	gravel	grav	76)	sand stone	sst
42)	ground water	GW	77)	sandy	sdv
43)	ground water table	GWT	78)	sedimentary	sed
44)	hard	hd	79)	shaft	S
45)	heavily	hly	80)	shale	sh
46)	horizontal	horiz	81)	shaly	shy
47)	igneous	ig	82)	sheared	shd
48)	impervious	impv	83)	siliceous	silic
49)	indurated	ind	84)	silt	st
50)	interbedded	interb	85)	silt stone	slst
51)	joint	jt	86)	silty	sty
52)	laminated	lam	87)	sink-hole	SH
53)	light	lt	88)	slaking	slkg
54)	limestone	lst	89)	slate	sl
55)	massive	masv	90)	solution channel	sol. chan
56)	medium	M or med	91)	specimen	spec
57)	medium-grained	M.gr	92)	speckled	speed
58)	metamorphic	metc	93)	sticky	stky
59)	micaceous	mic	94)	sub-angular	subang
60)	mineralized	mrlid	95)	sub-rounded	subrdd
61)	mixture	mixt	96)	test pit	TP
62)	moderately	mod	97)	trench	T
63)	mottled	motld	98)	tunnel	Tun
64)	non-slaking	non-slkg	99)	unconformity	unconf
65)	occasional	occ	100)	unconsolidated	uncons
66)	outcrop	otc	101)	vertical	vert
67)	overburden	ob	102)	very coarse	v.c
68)	pervious	perv	103)	very fine	v.f
69)	plastic	plas	104)	wash boring	WB
70)	porous	por	105)	water table	WT
71)	quartz	qtz			

TABLE 3 ABBREVIATIONS FOR MINERALS

[ Clauses 2.3 and 2.3.2.1(b) ]

Sl. No.	MINERAL	SYMBOL	Sl. No.	MINERAL	SYMBOL
1)	Actinolite	ak	36)	Diallage	dl
2)	Aegirine	ae	37)	Diamond	dm
3)	Albite	ab	38)	Dickite	dt
4)	Almandine	al	39)	Diopside	di
5)	Alunite	at	40)	Dolomite	do
6)	Amphibole	am	41)	Epidote	ep
7)	Andalusite	ad	42)	Feldspar	f
8)	Anhydrite	ah	43)	Fireclay	fc
9)	Anorthite	an	44)	Fluorite	fl
10)	Anthophyllite	ay	45)	Gallena	ga
11)	Apatite	ap	46)	Garnet	gr
12)	Arsenopyrite	ar	47)	Gilbertite	mg
13)	Asbestos	as	48)	Glauconite	gk
14)	Augite	au	49)	Gold ( Native )	Au
15)	Axinite	ax	50)	Graphite	gf
16)	Barite	ba	51)	Gypsum	g
17)	Beryl	be	52)	Haematite	hm
18)	Biotite	bi	53)	Halite, Rock salt	na
19)	Bismuthinite	bs	54)	Hornblende	h
20)	Calcite	cc	55)	Hyperstene	hy
21)	Cancrinite	ca	56)	Illite	it
22)	Carnallite	km	57)	Ilmenite	il
23)	Cassiterite	kt	58)	Jarosite	jr
24)	Cerussite	ce	59)	Kaolinite	kl
25)	Chalcedony	cn	60)	Kyanite	cy
26)	Chalcophyrite	cp	61)	Lepidolite	le
27)	Chlorite	ch	62)	Leptochlorite	lt
28)	Chromite	cr	63)	Leucite	lc
29)	Cinnabar	hg	64)	Limonite	lm
30)	Cobaltite	cb	65)	Magnetite	mt
31)	Columbite	cl	66)	Marcasite	ma
32)	Cordierite	co	67)	Mica	mi
33)	Corundum	ko	68)	Microline	mk
34)	Datolite	da	69)	Molybdenite	mo
35)	Desmine	dn	70)	Monazite	mz

( Continued )

**TABLE 3 ABBREVIATIONS FOR MINERALS — *Contd***

SL No.	MINERAL	SYMBOL	SL No.	MINERAL	SYMBOL
71)	Montmorillonite	mm	96)	Sericite	sc
72)	Muscovite	mu	97)	Serpentine	se
73)	Nacrite	nk	98)	Siderite	si
74)	Nepheline	ne	99)	Sillimanite	sl
75)	Nontronite	nt	100)	Silver ( Native )	Ag
76)	Olivine	ov	101)	Spessartite	sn
77)	Orthite	ot	102)	Sphalerite	zn
78)	Orthoclase	or	103)	Spinel	sp
79)	Ozokerite	ot	104)	Spodumene	sd
80)	Perovskite	pw	105)	Staurolite	st
81)	Phlogopite	pl	106)	Stibnite	sb
82)	Plagioclase	pg	107)	Sulphur	S
83)	Platinum ( Native )	Pt	108)	Sylvine	k
84)	Pyrite	p	109)	Talc	tk
85)	Pyrochlore	pc	110)	Titanite, Sphene	ti
86)	Pyroxine	pz	111)	Titanomagnetite	tm
87)	Pyrope	po	112)	Topaz	to
88)	Purokenc	py	113)	Tourmaline	tu
89)	Pyrrhotite	pn	114)	Tremolite	tr
90)	Quartz	q	115)	Vanadinite	va
91)	Rhodochrosite	ro	116)	Vesuvianite	vs
92)	Rutile	ru	117)	Wolframite	w
93)	Scapolite	sk	118)	Wollastonite	wo
94)	Scheelite	sh	119)	Zeolite	ze
95)	Scorodite	so	120)	Zinnawaldite	zw
			121)	Zircon	zr

**TABLE 4 SYMBOLS FOR SOME COMMON ROCK-FORMING MINERALS**  
 [ Clauses 2.3.2.1 (a) and 2.3.2.2 ]

MINERAL	SYMBOL	MINERAL	SYMBOL
Albite		Kyanite	
Amphibole		Magnetite	
Andalusite		Muscovite	
Biotite		Olivine	
Calcite		Phosphorite	
Chlorite		Plagioclase	
Cordierite		Pyrite	
Epidote		Pyroxene	
Feldspar		Quartz	
Garnet		Sillimanite	
Glauconite		Staurolite	
Graphite		Tourmaline	
Hypersthene			

# INTERNATIONAL SYSTEM OF UNITS ( SI UNITS)

## Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

## Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

## Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s <sup>2</sup>
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m <sup>2</sup>
Frequency	hertz	Hz	1 Hz = 1 c/s (s <sup>-1</sup> )
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m <sup>2</sup>

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